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VIII. *A new Arrangement of Papilios, in a Letter to the President. By*  
*Mr. William Jones, F. L. S.*

*Read July 5, 1791.*

DEAR SIR,

**M**AY I presume to offer to the consideration of the gentlemen of the Linnean Society some remarks upon Linnæus's division of the genus of Papilio, and to point out obvious distinctions by which they may be classed with more certainty? From the shape of the wings, a principal character with Linnæus, though various, yet in that variety so gradually approaching each other, I find it impossible to draw the distinguishing line: I therefore apply to anatomy for such characters as may with certainty distinguish each family from the others. The specimens that had been inspected by that great observer of nature were few in proportion to those since known; it was difficult therefore to ascertain, with the precision necessary, those distinctions that a further and more extensive acquaintance with a far greater number afforded; and yet, though his characters were not sufficiently marked, they have gone far to lay a foundation for a more correct division; and that, so far from raising new difficulties, I think points out the very scheme more clearly which Linnæus himself had adopted, and would have further elucidated, had he seen more on the same subject; for it may be presumed he was acquainted with very few more than he had in his last edition of his Systema described, only 274 Papilios; an inconsiderable number

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ber if brought in comparison with what I have seen, *viz.* above 1000, in the various cabinets in London, and above 400 more in various plates published by different authors: it is not to be wondered that he had not entered into the minutiae of those distinctions which appear evident upon a farther inspection to separate the particular families. The great leading outlines therefore only struck him, and these have occasioned the mistakes that he has run into respecting some of the Achivi, which when rectified, with a few others in the other divisions, his arrangement will be clear and decisive. But without attending to these remarks it is liable to error, as may be seen by Fabricius, who happening to describe a Papilio from two different cabinets, placed it once with the Equites and once with the Danai Festivi, with either of which it might be classed by adhering only to Linnæus's indefinite characters.

I am confirmed in my sentiments hereon by observing what both Linnæus and Mr. Yeats say of Papilio Apollo, *viz.* that the larvæ of this Papilio have two horns situated on its neck like those of many of the Equites, with which family I place it; clearly shewing that the families may not only be distinguished in the perfect insect, but have frequently, if not generally, a distinguishing character in the larvæ also, and that these distinctions are not imaginary, but certain and specific. I have therefore given in the following remarks, Linnæus's characters, adding only what will more certainly fix the limits or marks of each family.

**EQUITES.** The upper wings are longer from the posterior angle to the point, than to the base: the antennæ often filiform.

Corrected by saying

the upper wings are longer from the posterior angle to the point than to the base, occasioned by having four nerves instead of three, visible in every other family—

the palpi frequently only a brush — under wings with a connecting nerve in the centre, and without an abdominal groove.

These distinctions will evidently preserve this family from all others by having characters peculiar to itself, but will occasion the removal of Teucer, Idomeneus, Menelaus, Achilles, Nestor (with Patroclus, which I have my doubts of being a Papilio), and a few more from the Achivi, to the Danai and Nymphales with which they more properly ought to be arranged. It will also bring to this division from the Heliconii, Apollo and Mnemosyne; and from the Nymphales, Rumina, Panope, Dissimilis, and perhaps one or two more. — I remark there is not one arranged with the Troes but what is truly an Eques.

Upon looking over Cramer, I observe, he had been under equal difficulties with myself; that he had added to the Equites, Panope, Dissimilis, and some others, as I have done; from the Achivi he had selected many, and formed a new division called Argonauts, which seems composed of such as truly belong to the Nymphales, and have been placed with the Achivi, apparently only for their size and beauty. Describing Xiphares (which Mr. Fabricius has placed with the Achivi), he says “Selon la division de Mr. Linnæus celui-ci, comme le Pap. Jason, Pyrrhus, & plusieurs autres qui les ressemblent, appartiendroient aux Chevaliers Grecs: mais le caractère distinctif & susmentionné des pattes, les font ranger, selon moi, dans une autre, ou dans une famille particulière des Papillons diurnes.”

HELICONII. Wings narrow, entire, often naked or deprived of scales; the upper wings long, the inferior short—

Add,

with a connecting nerve in the centre; very slightly grooved, to admit the abdomen, which is in general long, as are also the antennæ.

DANAI. Wings entire—

Add,

the under with a connecting nerve in the centre, and a deep abdominal groove; palpi projected.

As I before remarked under the Equites, that the Troes had each of them the character assigned to the Equites, it was necessary the Achivi should have the same. So in the Danai Candidi, as every specimen described by Linnæus has the same character, *viz.* the connecting nerve, it is necessary also that the Danai Festivi should have the same.

NYMPHALES. Wings denticulated—

Add,

the under without a connecting nerve in the centre, and with a deep abdominal groove, palpi projected.

N. B. The terms of *subintegerrimus* to some of the Danai, and *subdentatus* to some of the Nymphales, approach so near as to confound the one family with the other; but the connecting nerve in the centre of the wing is a certain distinguishing character between the Danai and Nymphales.

PLEBEII. Small.

*Rurales*—Spots on the wings obscure.

*Urbicolæ*—Spots on the wings for the most part transparent.

As size can be no distinction to form a character, each family being of various dimensions, it is necessary to point out a character which others do not partake of, and which may easily be done, having even been noticed by Mr. Yeats in his Institutions of Entomology, p. 132, yet altogether not quite sufficiently—his words are as follows:

“ The family of the Plebeii is very inaccurate, and contains insects very different from one another, at the same time that they resemble, and have all the characters of some or other of the preceding ones, under which many of them, I think, might be properly arranged. The remaining Plebeii would compose a family very distinct from all the others, and which might be formed into two sections; the first containing small butterflies, having long and flexible or weak tails, slender bodies, and clubbed antennæ, as Cupido, Marfyas, Bæticus, &c. the other distinguished by the shortness, thickness, or breadth of their head, thorax and abdomen, and by the shape of their upper wings, which in these last are pointed at their extremity, and long in proportion to their width, as the Proteus, Phidias, &c.

“ The antennæ in this last division are generally uncinated or crooked at their extremity; some of them have likewise tails, but these are very broad and strong, and are always ciliated, or edged with a fringe of hairs, as in the Proteus, &c.”

They may therefore be thus divided:

PLEBEII *Rurales*—Thorax and abdomen slender; under wings without a connecting nerve; antennæ clubbed.

—with long, weak, flexible tails.

—without tails, wings entire.

PLEBEII *Urbicolæ*—Thorax and abdomen short, thick, or broad; under wings without a connecting nerve; antennæ uncinated or crooked at the extremity.

—with upper wings pointed at the extremity, and long in proportion to their width.

—upper wings less extended, and together with their under wings more rotund, with their margins entire.

Thus far nearly agreeable to Linnæus; yet there remain a few that cannot (if the foregoing directions are strictly attended to) be ranked with any division before mentioned; for which it is necessary to invent a new term, and to arrange separately, immediately after the Equites, as partaking more of that division than any other. I therefore call them.

#### ROMANI.

By so doing I take from the Equites all that have filiform antennæ. Their characters stand thus: Size in general large, without an abdominal groove; no connecting nerve; their antennæ generally acuminate; the veins of both upper and under wings going from their root to the extremity, nearly in straight lines. To this division I bring from Linnæus's Equites, *Leilus*, *Orontes*, and *Patroclus*; and from Fabricius's *Danai Festivi*—*Licas*, *Syphax*, *Evalthe*, and *Cochrus*, and a few others not yet described. These few remarks can leave no doubt to what division any *Papilio* should be referred. The connecting nerve is the most important character of all.

